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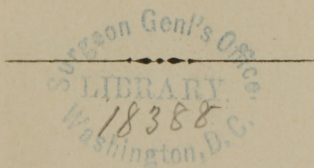
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THE
MODUS PROPAGANDI
OF THE
HUMAN SPECIES,
PHYSIOLOGICALLY EXPLAINED.

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P R E F A C E .

THE more deeply I study and reflect on the laws which govern the functions of the Animal and Organic nervous system, the Oxygen and the Blood, the more forcibly I become convinced of the vast importance, and the absolute necessity, of being fully acquainted with them.

Under such circumstances, the Profession must not deem me too enthusiastic in so quickly following up my investigations, and placing the results of my inquiries before them.

I hope the subjects treated of in the following pages will be found interesting, important, and useful; in such an event, I will be fully compensated, my sole object being the advancement and elevation of the profession of Medicine and Surgery.

230 WASHINGTON SQUARE, SOUTH,

June 25th, 1861.

MODUS PROPAGANDI

OF THE

HUMAN SPECIES.

Modus Propagandi of the Human Species—Sexual Excitement—Animal Nervous System communicates between Mind and Genital Organs—Organic Nervous System—Mode of Distribution in Genital Organs—Connection between Animal and Organic Nerves—Genital Organs—State of Genitals previous to and after Coition—Propagation of Life—Old Men should not Marry—Bad Effects from—Masturbation—Spermatorrhœa—Treatment—Young Married Men—Over-Sexual Indulgence—Seminal Emissions—Convulsions—Impotence—Treatment—Impotence from Moral Causes—Treatment—Prostate Gland demonstrated to be the Muscle instituted for the Expulsion of the Semen.

WHEN a passion of an amatory character seizes a buoyant young man, ushered in by the presence of a fascinating female to whom he is lovingly attached, peculiar excitement of the animal and organic nervous systems is the immediate result, presently announced, by the orgasm of the genital organs; the picture impinged on the retina is reflected on the brain, the seat of the mind, by the communication of the former with the latter, through the medium of the optic nerves; the impression created in the brain or mind is transmitted, through the spinal cord, to the spermatic nerves, which arise from the second lumbar nerves, or the branches communicating between

the first and second lumbar nerves, to the cremaster muscles and the testicles; as well as through the pudic nerves, branches of the sacral plexuses, to the prostate gland, levatores ani, Wilson's muscles, erectores penis, compressores venæ dorsalis penis, corpora cavernosa penis, corpus spongiosum penis, and glans penis.

From what has been now stated, it is evident that free communication takes place between the mind and genital organs, and that the operations or wishes of the mind are conveyed to all the organs to which the nerves are distributed, as the brain, or mind, located in the brain, extends to them through the nerves.

It is now proper to point out the operation of the organic nervous system. It is to be remembered that the animal and organic nervous systems act in harmony; the brain, or the mind, located in the brain, communicates with the superior central organic ganglion, through the crura of the brain attached to it; the ganglion communicates through the brain, and par vagum, with the solar plexus, or, more correctly, with the spermatic ganglion, and spermatic plexus accompanying the spermatic arteries, in their destination, and final distribution in the testicles; the pudic artery is surrounded by a plexus or retina of nerves derived from the hypogastric organic plexus; the spermatic nerves freely communicate and inosculate with the organic nerves surrounding the spermatic arteries, thus establishing a free communication between the two sets of nerves; the pudic nerve takes the same course as the pudic artery, and is distributed to the prostate gland, levatores ani, and Wilson's muscles, erectores penis, compressores venæ dorsalis penis, (Houston's muscles,) corpora cavernosa penis, corpus spongiosum penis, and glans penis, and inosculates with the organic nerves surrounding the pudic arteries, thus establishing a free communication between the animal and organic nerves of those parts.

This short description of the arrangement of the animal and organic nerves in the genital organs, now given, will enable the student to proceed to a further examination of what takes place during sexual excitement.

On the brain or mind communicating with the organic nerves in the cremaster muscles and testicles through the spermatic nerves, the cremaster muscles are thrown into ac-

tion, and elevate the testicles, or approximate them towards the external abdominal rings, shortening the distance of the vasa deferentia to the prostate gland; the organic nerves surrounding the spermatic arteries become expanded; dilatation of the arteries is the result; through the intimate connection of the former with the latter, a greater quantity of blood, with a greater supply of oxygen, is the sequence; the organic spermatic glands formed at the termination of the capillary arteries commence to secrete the semen, which is carried away by the seminal ducts. It may be right to state, that the organic spermatic gland is composed of the termination of the capillary artery, the commencement of the capillary vein, and organic nervous tissue derived from the retina surrounding the capillary artery—the seminal or excretory duct. The process by which the semen is formed is well worthy of consideration. The increased quantity of blood supplies the material for the production of the semen; the increased quantity of oxygen is for the purpose of increasing the vital power of the organic glands, in the production of the seminal element—the union of the oxygen with the glands is accompanied by increase of temperature and the evolution of electricity; when, therefore, the gland has elaborated the peculiar element of the semen, in accordance with its function, under the guidance of the spermatic ganglion, the electricity decomposes some of the serum of the blood whilst circulating through the gland, the hydrogen of which unites with the seminal element and oxygen, with which it is in combination, and thus forms the seminal fluid, which is conveyed by the seminal duct towards the vas deferens. It will be remembered that water, which is composed of oxygen and hydrogen, forms the great bulk of the seminal fluid; at the same moment that communication is had with the testicles, other correspondence is had with the prostate gland, levatores ani, Wilson's muscles, erectores penis, compressores venæ dorsalis penis, corpora cavernosa penis, corpus spongiosum penis, and glans penis, through the medium of the pudic nerves, which correspond and inosculate with the organic nerves accompanying the branches of the pudic arteries, the organic nerves surrounding the arteries distributed to the prostate gland become strong, firm, and contracted, the arte-

ries to which they are connected become similarly circumstanced, as well as the muscular fibres and cellular tissue to which the arteries are distributed; the prostate becomes firmly contracted; the *canals* of the common seminal ducts which enter the prostate at its *base*, and open near its *apex*, are thus rendered impervious; the organic nerves distributed to the levatores ani, Wilson's muscles, the erectores penis, and compressores venæ dorsalis penis, are similarly circumstanced: hence, the same condition of the arteries and muscles follows—namely, firm contraction; the organic nerves distributed to the arteries of the corpora cavernosa, corpus spongiosum, and glans penis, become at first dilated, followed by a corresponding dilatation of the arteries—thus admitting a large quantity of blood to enter their trunks and capillaries; the penis now becomes firm and turgid, whilst, at the same time, that the movement of the blood in the arteries is taking place, the compressores venæ dorsalis penis are discharging an important duty. It will be observed, unless some barrier was placed to the return of the blood by the veins, that the arteries would be soon unloaded, and that flaccidity of the penis would follow—particularly, on any attempt at intromission into a narrow vagina: hence it is, that the thin tendon of the compressores venæ dorsalis penis, forming a flat band over the dorsal vein, prevents the return of the blood, and keeps the penis erect; indeed, the penis may be truly said, when in a state of erection, to be surrounded by a firm band at its root, formed by these muscles; therefore, as long as the muscles continue in this condition, the penis must continue firm, and in a state of erection, the organ being previously injected with blood.

Intromission of the penis into the vagina is immediately followed by a motion on the part of the male, attended with friction or titillation; the testicles, during this time, are secreting the semen, which is carried by the vasa deferentia towards the common seminal ducts, which permeate the prostate gland; but, as the canals are closed by the contracted condition of the gland, the semen regurgitates into reservoirs called the vesiculæ seminales; as soon as these reservoirs can contain no more, and commence to press on the prostate gland, the "*vis-à-tergo*" is followed by a shock that pervades the whole frame, and the

semen is ejected with force, and *per saltum*; the friction of the penis in the vagina, (just like tickling the soles of the feet, will, after some time, cause alternate contraction and relaxation of the organic nerves surrounding the arteries, followed by a similar state of the arteries themselves, and the muscles to which the arteries are distributed,) in due time, is followed by spasm of the organic nerves; the arteries and muscles to which the nerves are distributed induce relaxation and contraction of the muscular fibres of the prostate gland, levatores ani, Wilson's muscles, erectores penis, compressores venæ dorsalis penis; thus, it is at the proper moment the gland or muscle dilates, when the semen rushes into the common seminal ducts, the gland or muscle then suddenly contracts, the semen is ejected with proportionate force, the muscle again expands and contracts, with similar results, until all the semen is discharged. Contemporaneously with the movement of the prostate, a similar movement of the levatores ani, Wilson's muscles, the compressores venæ dorsalis penis, and erectores penis takes place: alternate relaxation and contraction of these muscles assist the prostate in the expulsion of the semen; the alternate relaxation and contraction of the levatores ani propel the semen from the vesiculæ seminales into the common seminal ducts, and empty them; Wilson's muscles, by alternate relaxation and contraction, eject the semen forward; the erectores penis promote the same movement; the compressores venæ dorsalis penis render assistance by a similar action; again, by this action of the muscles, pressure is taken off the veins, the blood is allowed to return to the general circulation, and the penis, worn out by exertion, drops, pendulous and flaccid, into a quiescent state.

It is a remarkable, and a very important matter, to watch what occurs when the semen is about being discharged. It is true that, towards the latter end of the process of coition, the respirations become shorter and shorter, until respiration is momentarily suspended, just as the discharge of semen is about taking place. The *suspension* of respiration is *isochronous* with the shock *communicated* to the *whole frame* on the *emission* of the semen; the electricity or vital fluid given off by the pulmonary organic glands, to unite the oxygen of the air with the venous blood, has its operation for a moment in-

interrupted, it being necessary that such should take place in order to propagate life to another individual; therefore, the electric or *vital* fluid, instead of *being given off* by the pulmonary glands for the purpose of continuing life in the usual way, has its course changed, and directed to the semen just being discharged. Thus it is that man imparts a portion of his own life to his offspring; hence it is that derangement of the organic nervous system is communicated from one individual to the other—as, for instance, epilepsy; hence it is that the offspring of drunkards are often afflicted with epilepsy, and other diseases of a nervous character.

The semen being now placed in the vagina of the female, charged with the vital agent in the manner just described, having an affinity for the ovule located in the ovum, attracts it from the ovary into the uterus, where union takes place between the semen and the ovule, and lays the foundation for the formation and organization of the future individual. The semen, when charged with the vital agent, is guided by the same or similar laws as those which govern a magnet, that will attract a piece of steel, or particles of steel, in its immediate vicinity, for a given period, and no longer; thus showing that its influence is capable of extending a certain distance, and no farther. In like manner, the miniature of the internal and external organization of the male is thrown on the semen; and in like manner, the vital agent is capable of forming and continuing to increase the organization of the body for a certain time, and no longer. To demonstrate that a portion of the vital agent, or Life itself, is imparted to the semen during the process of coition or sexual communication, I will endeavor to prove this fact by a familiar illustration. When a broken-down old man, rendered youthful in appearance by an artistic hair-dresser, a scientific dentist, and fashionable tailor, contracts marriage with a dashing young widow, his appearance, as well as the train of symptoms that soon present themselves, leave no doubt that he is regularly “used up.” His pale countenance, sunken eyes, feeble or tremulous gait, pain in the loins, accompanied by palpitation of the heart, hurried respiration, loss of appetite, as well as the hypochondriasis he labors under, indicate the wreck of his organic nervous system.

The cause of all those troubles can be easily explained. Every time the old fellow, to gratify his vanity more than his passion, has connection with his wife, he gives off a portion of his life; continued destruction of the vital agent is soon followed, not only by the symptoms above described, but convulsions or sudden death; the organic pulmonary glands become so exhausted, that, at length, they are unable to give off enough of electricity or vital fluid to unite the oxygen with the venous blood—death is therefore caused by the want of oxygen to combine with the organic nervous glands and ganglia. Old men should, therefore, “look sharp,” and ponder well before they get themselves entrammeled in the troublesome bonds of wedlock with a widow.

The treatment calculated to restore to health a person suffering from the disturbance of the organic nervous system, produced by the cause specified, commands attention. The patient should be sent on a visit to some distant place, where he would be removed from the embraces of his wife; as soon as his dyspeptic symptoms are removed, he should be liberally supplied with animal food, and get a fair share of malt liquors; the administration of some preparation of iron and nux vomica would be advisable, as well as the alternate use of warm and cold shower-baths, carriage exercise in the open air, pleasant society, &c.

The same group of symptoms which characterizes the troubles of a feeble old man, when he gets married to a lascivious widow, are found in a young man who has practiced, and continues to practice, masturbation. The expression of timidity, the languishing or suspicious eyes, the pallid features, the palpitating heart, the offensive breath, the flatulent stomach, the pain in the small of the back, the frequent micturition, the many and numerous ills, the patient will inform you, that harass his mind and body, will at once point out the genital organs as being the “*fons et origo mali*.” On inquiry, the patient will tell you he has either practiced masturbation, or that he is in the habit of doing so.

There is no more troublesome disease to treat than spermatorrhœa; the patient the subject of it is invariably a hypochondriac, and liable to fall a victim to quacks and impostors.

The patient is to be truly pitied, and his case should be thoroughly understood, with a view to its alleviation or cure. Instead of frightening the wits out of the unfortunate sufferer, as is very often done by unprincipled persons, who love money more than they do the patient, and make the miseries of the latter subservient to the accumulation of the former, the patient should be assured, by attending to the directions given to him, that he would be restored to health and vigor within a given time—varying from three to nine months. When the organic nervous system is weakened to such a great degree, the patient, on being fully enjoined to desist *in toto* from the practice of self-abuse, should be ordered nutritious animal food, malt liquors, iron combined with nux vomica, conium, shower-baths, lively society, and sea-bathing; he should be made to get up early in the morning, and to attend to his usual business.

I am well aware the use of stimulants and animal food is countermanded by able surgeons; but, when the condition of the patient is taken into consideration, their utility will be at once recognized. In a patient reduced to the low state I have described, the blood is impoverished, and not present in sufficient quantity; the tissue or structure of the organic nervous system is deteriorated and attenuated; therefore, it is necessary to restore the one and repair the other. In consequence of the condition of the blood and organic nervous system, the prostate gland is in a feeble and relaxed condition; the slightest irritation of the penis will be followed by the discharge of mucus from the follicles connected with the prostate gland, or, sometimes, seminal fluid, if deposited in the vesiculæ seminales. In the commencement of masturbation, the organic nerves will hold out for a considerable time before they contract and relax; but, when the practice is continually persisted in, they yield almost immediately, and relaxation and contraction are the immediate results, with the discharge of fluid. The animal diet, with the porter, iron, and nux vomica, increase the quantity of the blood, as well as improve its quality; and, further, provide for the renovation and invigoration of the organic nervous system—rendering the latter firm, strong, and buoyant. The substance of the organic nervous system suffers from wear and tear, the same as the other or-

gans of the body: the iron furnishes the blood with the particular element required for the restoration or renovation of the substance of the organic nervous tissue; whilst the nuxvomica gives strength and energy to the nerves; as is exemplified when the prostate gland firmly contracts, closes the seminal ducts, and prevents the passage of the semen through them into the urethra: the conium acts as a sedative on the organic spermatic glands of the testicles, prevents or arrests the secretion of semen: the warm baths, followed by cold shower-baths, regenerate and strengthen the organic nervous tissue; change of air and employment invigorate the mind. I have not alluded to the cauterization of the seminal ducts, as practiced and recommended by Lallemand, as I deem such treatment totally useless—I speak from experience on the matter)—without attending to the constitutional treatment; merely treating the effect, without removing the cause, is not satisfactory. The chief advantage to be derived from the caustic is the moral effect it produces: it causes a sufficient amount of pain to deter the patient from manipulating the virile organ, and, thus, inducing excitement or irritation of the genital organs. Lallemand advises the administration of half a pint of cold water, as an enema, at bedtime, with good results: the cold water causes the contraction of the muscular fibres of the prostate gland; thus closing the common seminal ducts, and thus precluding the passage of the semen from the vesiculæ seminales into the urethra. It is, therefore, to be remarked, that the application of caustic alone cannot be relied on, without attending to the constitution. The reason why it is desirable to prevent the secretion of the semen is, to prevent the irritation of the genitals which follows, and to give time to the prostate to recover its strength and energy.

Mr. Hunter states that, if a man continues to take opium for a certain period, he becomes impotent. The same remark is confirmed by Sir Astley Cooper. The opium, therefore, interferes with and prevents the secretion of the semen by the spermatic glands in the testes. Conium is given on the same principle as opium acts.

Young married men, who have lived virtuously previous to their marriage, will, after some months, complain of a train

of symptoms, which will leave no doubt of their having indulged too freely in their marital rights. After advising the party to indulge less in sexual intercourse, and to avoid stimulants in the shape of wine, ale, or porter, the patient takes his departure, and after the lapse of some weeks or months returns, and says he has adhered to the rules down, but that he is no better, and is still "miserable and wretched." On inquiry, the patient will tell you, after he passes water, that something like starch follows, and that a considerable quantity of starchy matter flows from the penis during the process of defecation. How is this matter to be explained? The man adheres to his instructions, has no connection with his wife; but his mind contemplates the act: the result is, the semen is secreted and lodged in the vesiculæ seminales; the muscular fibres of the prostate not being sufficiently strong, but partially relaxed, the pressure of the fæces on the vesiculæ seminales forces the semen through the common seminal ducts, no opposition being given by the muscular fibres, as just explained. The continued discharge of the semen accounts for the symptoms. The patient should get conium, iron, nuxvomica, cold-water enemata, be sent away from his wife, and be allowed nutritious diet, with malt liquors. It is true that, in persons who practice masturbation, as well as young married men, the penis, at the commencement, will bear a great deal of friction before alternate contraction and relaxation of the organic nerves are induced, followed by alternate contraction and relaxation of the arteries, as also the muscles to which the arteries are distributed; but it is equally true that, after a certain time, debility will set in, and that the powers of resistance will, as already explained, give way, as evidenced by the convulsions which in many cases supervene: hence, the alternate relaxation and contraction of the organic nerves are not confined to a part of the organic nervous system, but attack the whole organic nervous system, and shake life to its very foundation. Convulsions, in truth, may be deemed a struggle between life and death, under whatever circumstances they occur; therefore, they must be always looked on with apprehension. Convulsions are attributable to, or caused by, a want of oxygen to combine with the organic nervous ganglia and glands,

inducing spasm or alternate contraction and relaxation of the organic nerves surrounding the capillary arteries, and a similar condition of the arteries, and of the muscles to which the arteries are distributed. Therefore, when convulsions attack a man addicted to self-abuse, it must be recollected that vitality has been previously impaired; that the whole organic nervous system has been subjected to repeated shocks; and that, consequently, the pulmonary organic glands are partially paralyzed, and incapable of discharging their functions—namely, giving off electricity or vital fluid to combine the oxygen of the air with the venous blood, which is to be subsequently conveyed by the arteries to the organic ganglia and glands, to keep in existence the spark of life. That this is the true explanation of the exciting cause of convulsions, must strike every person with its truthfulness, who has ever witnessed the convulsions of an animal bled to death—the convulsions which set in before death takes place, when all the blood is drained off, show the struggle life makes for oxygen before its departure from its abode in the organic nervous system.

In connection with the evils resulting from masturbation, it is well to state, that sometimes complete loss of nervous power in the organic nerves takes place; the man has the will to have sexual intercourse, but is unable to obtain an erection. In this instance, repeated abuse has caused paralysis of the organic nerves—a matter sometimes proved by the paraplegia which accompanies it. The paralysis of the lower extremities is caused by the diseased condition of the nerves extending along the course of the pudic to the internal iliac, common iliac, and aorta. The organic nerves surrounding the arteries having their vital functions destroyed, accounts for the paralysis of the lower extremities which follows. The impotence induced by this cause should be treated by the administration of animal food, such as beef, mutton, oysters, together with ale or porter, iron combined with strychnine, small doses of opium, cold shower-baths, sea-bathing, horse exercise, the introduction of bougies, mixing in lively society, and abstaining from tobacco in every form. I have not mentioned electricity, as it is not *applicable* to diseases of the organic nervous system; it kills the vital agent in the organic nervous tissue *whence* it

supplies the place of the immaterial agent in the animal nervous system. In corroboration of this doctrine—(see experiments detailed by Brown-Séquard in his work)—the form of impotence here described must not be confounded with that form alluded to by Sir Astley Cooper, when a young man fails to have an erection through too great a desire to accomplish his purpose.

It is now established, I presume, that certain moral causes, as well as certain physical agents, will cause extreme debility and relaxation of the organic nervous system, incapacitating it from discharging its functions: as, for instance, a sudden fright will stop the functions of the pulmonary organic glands, followed by fainting; the pulmonary glands being unable to give off electricity, or the vital fluid, to combine the oxygen with the venous blood to be subsequently conveyed by the arteries to the organic ganglia and glands; suspended animation is the result. Tobacco, when taken into the stomach, will be followed by similar effects. Again, certain moral causes and physical agents will induce a vigorous state of the organic nervous tissue. Buoyancy, induced by good news of great import to the individual's future happiness in life, will be accompanied by a vigorous condition of the organic nervous system; the eyes will sparkle, the countenance will be animated, the muscles will be invigorated, the person will "leap for joy." Again, a physical agent, in the shape of a tumbler of French brandy punch, will induce an excited state of the organic nervous system.

To revert to the patient who suffers from impotency from over-anxiety, follow Sir Astley Cooper's advice. Enjoin him on no account to attempt to have sexual intercourse for some months with his wife; order bread-pills to be taken regularly three times a day; the impression made on his mind with respect to the matter will counteract the other previously made; and just recommend, by way of elevating his spirits, in consequence of your prohibition, the imbibition of a tumbler of punch before going to bed, and the case will give no further trouble, as the organic nerves will discharge their duties immediately.

It sometimes happens that ripe bachelors and men of strictly moral habits, who lead lives of celibacy, but who indulge in luxurious or idle habits, as well as gratify their appetites

with a considerable amount of animal food, and, besides, drink ale, porter, wine, or punch, to make them happy and jovial before going to bed, have the mortification as well as discomfort, on awaking from a dream, to find themselves surrounded by damp linen, in consequence of profuse seminal emissions. Here, it is to be remembered, that Sir Astley Cooper says, a man in his health will have a seminal emission every ninth day, and that the mode of living above described promotes such an occurrence: although persons can command their passions while awake, they cannot control the operations of the mind when in a dream; the animal propensities will conquer the moral under such circumstances.

“Si expellas naturam furca, recurrît atque recurrit.”

When consulted in a case of this kind, as will occasionally happen, the man should be put on moderate diet, all stimulants should be prohibited, bodily exercise insisted on, as well as early rising; the bowels should be kept free. A short persistence in this course of treatment will soon set all matters right.

As some persons may think I attribute too much importance to the prostate gland, it is meet and right I should give as much satisfaction as possible to persons skeptical on the correctness of the doctrine with respect to it I have put forward on the present occasion. It is to be recollected the prostate gland is not found developed in young children, or in boys, until the age of puberty. It is also to be remembered, the prostate becomes degenerated in old age; its functions and development are therefore coeval with the epoch a man is to propagate, and continue to propagate, his species. Such being the case, it follows that the prostate must play an important part in the propagation of the species. The importance of its office may be succinctly explained. The testicles represent a distilling apparatus for the secretion of the semen; the vasa deferentia represent, in *shape* and *construction*, two worms connected with the stills, for carrying the liquor or semen to the receivers, the vesiculæ seminales; the prostate gland, when contracted, as it is during the process of coition,

furnishes a stop-cock—the common seminal ducts are closed by it; the vesiculæ seminales furnish receivers for the semen to be collected in, until required to be discharged through another pipe, (the urethra,) to its final resting-place in the vagina. It is evident that, if the semen requires to be sent to a distant part, that a pump is required for the purpose; and such a mechanical contrivance is furnished by the prostate gland. The gland or muscle dilates and contracts in the same manner that the heart contracts and dilates. After a given period, the semen is accumulated behind the prostate gland, but it cannot pass through, in consequence of the contraction of the gland or muscle; the gland or muscle now dilates, the semen rushes into the ducts, the gland now forcibly contracts, the semen is expelled by force and *per saltum*; an interval takes place; again dilatation takes place, and again contraction, with another discharge of semen; and so on until the entire semen is discharged. It is evident, therefore, that Mr. Thompson's account of the prostate gland being muscular is correct; and let me state, that next to the heart, it is the most *important* muscle in the body; that, in truth, it is the propagating muscle, or a muscle without which the species could not be propagated. The harmony of action between the levatores ani, Wilson's muscles, the erectores penis, the compressores venæ dorsalis penis, and the prostate, is wonderful. The adaptation of means to accomplish ends so amazingly constructed and arranged, thus presented by the examination of the important subject I have attempted to elucidate, indicate the wisdom of the Omnipotent Creator, and must strike the student with wonder at every step of his investigations.

MODUS OPERANDI OF MEDICINES.

MODUS OPERANDI OF MEDICINES.

NEVER being satisfied with an answer to a question unless philosophically responded to, and deeming it derogatory to the noble science of medicine to be unable to explain everything, satisfactorily, connected with the healing art, I am actuated to attempt the elucidation of matters hitherto involved in mystery, and to place the practice of medicine on an imperishable and firm foundation, as far as my abilities enable me to do so.

It is well known that when a few drops of a mild solution of sugar of lead are dropped on an inflamed conjunctiva, that alleviation of the distressing symptoms, after some time, is the result, as well as a return of the membrane to its normal appearance.

It is a popular remedy to apply white lead, or thick white paint, to a surface recently scalded, when a decided advantage ensues.

Medical practitioners place great confidence in the administration of acetate of lead in hæmoptysis as well as in hæmorrhage from the uterus, and the results, generally, have met their most sanguine expectations; the arrest of the discharge of blood being the sequence.

In cases of diarrhœa, where every other medicine fails, acetate of lead is found of the most essential service in arresting the flux or evacuations from the bowels.

In cases of external inflammation, Goulard's extract is invariably had recourse to with marked success in relieving the disagreeable sensations of the patient.

In cases of hæmorrhage from the bowels, acetate of lead as an enema is attended with good effects; the question now suggests itself—How does the lead act?

This interrogatory can be answered by stating, that in a case of inflammation of the conjunctiva, the lead acts as an irritant

on the organic nerves surrounding the capillary arteries, causing *contraction* of the vessels, and preventing the ingress of blood into them, and consequently, preventing the occurrence of the sequelæ consequent on an increased action of the capillaries, or what is commonly called inflammation.

In the case of the application of the white-lead paint, the lead acts as an irritant on the capillary organic nerves, causing contraction of the arteries, and consequently, precluding the occurrence of the sequelæ consequent on a dilated condition of the capillaries—namely, an increased quantity of arterial blood as well as oxygen—the requisites for increasing the temperature and the production of lymph or serum, or what is called inflammation.

In the case of hæmorrhage from the lungs and uterus, the acetate of lead acts on the organic nerves of the stomach and intestines primarily, and through them on the nerves surrounding the capillary arteries in the lungs, as well as the capillary arteries in the uterus, causing constriction of the capillary arteries, and thus, by diminishing the calibre of the arteries, preventing the ingress of blood, and consequently arresting the hæmorrhage.

In the case of diarrhœa, the lead acts as an irritant on the organic nerves surrounding the capillary arteries of the intestines, causing constriction of the capillaries, thus preventing the ingress of blood, and thus removing the cause or the provision for the formation of serum from the organic glands at the termination of the capillary arteries in the intestinal tube; no blood being supplied, no mucus or serum can be generated by the action of the organic glands.

With respect to the lead lotion, it, too, acts on the organic nerves surrounding the capillary arteries of the surface, causing constriction of the capillaries, arresting the entrance of arterial blood with its oxygen, thus preventing the increased temperature of the part, by the union of the oxygen with the organic nervous glands, and the material for the production of lymph.

In hæmorrhage from the bowels, the lead causes constriction of the capillary arteries of the rectum, as well as constrict-

tion of the capillary arteries of the intestines; in fact, it causes constriction of the capillary arteries all over the body.

It may be objected that the lead does not act as an irritant, causing spasm of the organic nerves surrounding the capillaries, but as a sedative on the organic nerves; to settle this objection, it is necessary to refer to what occurs in painter's colic. When a painter is confined to a close room, putting on white-lead paint, after some time he will be attacked with constipation of the bowels, to be followed with most distressing paroxysms of pain in the bowels, causing him to writhe and twist like an eel, and beg for relief in the most piteous manner; the abdominal muscles will be next engaged in the trouble, and the patient will experience attacks of the spasm closely resembling tetanus.

The vapor of the lead passes with the air into the lungs, is united with the venous blood, at the same moment with the oxygen, is again given off with the oxygen to the organic nervous glands, at the termination of the capillary arteries; on the union of the oxygen with the glands, it manifests or shows a predilection for the organic glands in the intestinal tube; the glands surrounding the gums are also affected, as evinced by Burton's blue margin. All the capillary arteries in the body are affected, as evidenced by the pallid or livid color of the patient.

What is the condition of things in a case of this kind? The intestinal tube is all through contracted; the muscular fibres are spasmodically contracted; the pain and spasm are produced by the irritation of the nerves, and the spasm or violent contraction of the muscles; the returning spasm of the muscles accounts for the violent paroxysms of agony the patient is subjected to.

It will be remembered the cerebro-spinal nervous system has nothing to do with the nerves of the intestines, so that the evidence is conclusive, that the organic nerves of the intestines, as well as the organic nerves supplying the abdominal muscles, are alone implicated; from what has just been stated, it is clear that the lead acts as an irritant, and not as a sedative, on the organic nerves surrounding the capillary arteries, and supplying the muscles.

In cases of poisoning by lead, what should be the antidote?

Firstly.—Tobacco may be mentioned, as it produces a condition diametrically opposite to the lead; when administered by the mouth, by the rectum, or applied externally, it relaxes or innervates the organic nerves surrounding the capillary arteries, all over the body, and relaxes the muscular fibres of all the muscles of the body, depriving them of their force and energy.

Secondly.—Belladonna may be enumerated, as it acts as a sedative on the organic nerves over the body, as is exemplified in the case of the iris, which becomes dilated under its influence; again, in like manner, it acts as a sedative on the branches of the mammary artery, preventing the production of milk; it also acts on the rigid os uteri, causing dilatation of the os, precisely as it does in the case of the iris, which, too, is a circular muscle; the intestinal tube being a circular muscle, it should also act on it through the nerves, causing its dilatation, and thus relieve the spasm.

Opium given in small doses acts as a stimulant on the organic nerves, known by the contracted pupil; but in very large doses, it acts as a sedative, producing relaxation of the muscular fibres of the intestines; giving opium in large doses is highly recommended by Professor Dickson, of Philadelphia, with success, in the treatment of painter's colic; the opium in large doses relieves pain, and relaxes the muscular fibres of the intestines; if continued it will act as a purgative by its tranquillizing action on the organic nerves of the capillary arteries, thus allowing more blood to enter them, and thus making provision for the organic glands to operate on, in the formation of mucus or serum, which, in its turn, stimulates the intestinal tube to its accustomed peristaltic action.

Chloroform produces an opposite effect to lead, and consequently must be an antidote to it, as regards relieving the pain and spasm consequent on the irritation of the nerves, and spasmodic action of the muscles.

In my opinion, resting the basis of treatment of painter's colic on sound physiological and philosophical principles, the proper mode of treatment consists, in the first place, in administering a smart purgative to the patient, and having allowed

a reasonable time for its operation, to apply castor oil mixed with croton oil to the abdomen, and next place the patient fully under the influence of chloroform; the spasm of the organic nerves would be removed by the latter, and the medicine would act in the usual way, that had been administered internally, and applied externally; the bowels being now freed, the next aim should be to neutralize the poison of the lead; to accomplish this, it would be rational to give sulphuric acid diluted copiously to the patient, and thus convert the lead into a sulphate, which everybody knows is harmless;* the patient, in addition, should get light nutriment as well as moderate doses of opium. When a person dies from the poisonous effects of lead, it is interesting to know what causes death; the lead irritates the organic nerves surrounding the capillary arteries; the irritation is eventually propagated to the pulmonary organic glands, incapacitating them from giving off the electricity to unite the oxygen of the air with the venous blood, so that the patient dies ultimately for the want of oxygen to unite with the organic ganglia and glands.

Although I have now so often stated that stimulants will cause a dilatation of the capillary arteries through their actions on the organic nerves surrounding them, I cannot help giving a familiar illustration of the fact to persons who are skeptical on the point. Almost immediately on some spirits being thrown into the eye, the vessels permeating the conjunctiva will be found filled with red blood; vessels will be seen where none previously appeared to exist; now it is evident the stimulant acts on the nerves surrounding the capillary arteries, causing their dilatation, and the entrance of red blood where it previously was debarred admission; indeed, it may be well to repeat, that if the spirits are taken into the stomach, it will cause the same condition of the arteries, as that just described, all over the body, as every person almost has practical experience of. Who has not observed the flushed countenance, the

This is a popular remedy given to miners, with the view of preventing lead colic. Iodide of potassium is likewise given, as every physician well knows, with the view of neutralizing the lead poisons.

sparkling eyes, and the vascular excitement of a man who has slightly indulged in the imbibition of hot brandy punch?

Again, let a drop of concentrated prussic acid be dropped on the eye of a rabbit, and vascular action will cease in a moment; the acid will at once kill the animal by its sedative influence on the organic nerves surrounding the capillary arteries.

In the case of the spirits, there is excited action of the organic nerves surrounding the capillary arteries; in the case of the prussic acid, things are diametrically opposite—there is total depression of the organic nerves surrounding the capillary arteries.

It is a curious fact, that when a man has continued to take nitrate of silver for a long time, that he will be eventually found to have changed his natural color for a blue one. It may be inquired, What is the cause of this phenomenon?

I will endeavor to explain; indeed, it throws great light on the exciting causes of obscure diseases whose mode of propagation I have already endeavored to explain, as well as affords a proof that my doctrine, with respect to the organic nervous glands, is correct—namely, that every artery terminates in a capillary; that every capillary is surrounded by a continuation of a retina of organic nerves, which pierces its coats, and is prolonged to the extremity of the capillary, where the organic nerves form a gland through which the blood circulates, and after giving off its oxygen to the organic nervous tissue of the gland, is again taken up by the capillary vein which takes its origin in the gland; the excretion of the gland being carried off by the excretory duct of the gland, which is visible to the eye—namely, the pore of the skin.

To revert to the subject where the nitrate of silver is taken for a great length of time: the capillary nerves surrounding the capillary arteries become imbued with the action of the nitrate of silver, as well as the organic glands; the blood circulating through the intestinal organic glands is next contaminated or impregnated with the silver, the venous blood is carried from the glands thus charged with the silver to the right side of the heart, thence to the lungs, where it receives its oxygen, and next conveyed to the left side of the heart, from whence it is sent by the arteries all over the body; on

the union of the oxygen with the organic nervous glands, the silver is also communicated to the glands, and in due time, when a sufficient quantity is deposited in the organic nervous glands, on exposure to light, form an oxide of silver, which accounts for the color of the skin, as already described. This explanation may be thought to be simply *curious* and ingenious; but whoever takes the trouble to study the subject, will have reason to believe it is correct.

Having stated that the organic nerves existed wherever an artery existed, I have to allude to what takes place when pigs are fed on madder. If a pig is fed on madder for some time and then killed, the bones will be found dyed of the same color of the madder—namely, red; the deposition of the color affords a corroborative proof of the manner in which the nitrate of silver is deposited in the human subject; it further proves that the bones are well supplied with arteries as well as organic nerves.

The philosophy of giving certain medicines for the purpose of curing certain diseases, is, I presume, the most interesting topic that can possibly be brought under the notice of the profession. As I already described the symptoms of chlorosis and its mode of treatment, as well as enforced the good effects to be derived from the administration of iron, I now wish to remark, that the iron is communicated to the organic nervous glands, precisely in the same way that the nitrate of silver is; but that instead of dyeing the glands, as the nitrate of silver and madder do, it invigorates and renders their organization more perfect for the duties they have to perform, which need not be again enumerated.

To recapitulate, briefly, the action of the medicines alluded to—the lead causes spasm of the organic nerves surrounding the capillaries, thus causing contraction of the capillary arteries, thus arresting the flow of blood through them. The alcohol stimulates the organic nerves surrounding the capillaries, causing dilatation of the capillaries, and also increasing the impetus of blood through the capillaries. The hydrocyanic acid paralyzes the organic nerves surrounding the capillary arteries, and arrests the passage of blood through them.

I could go on to a great length explaining these matters, but I confidently hope that some other person more competent will take the same view of the organic nervous system, the oxygen, and the blood, that I do. In another paper I will give some clear, forcible, and *practical* illustrations of the laws which govern the organic nervous system, the oxygen and blood.

5754 *Analogy*

THE
MODUS PROPAGANDI
OF THE
HUMAN SPECIES,
PHYSIOLOGICALLY EXPLAINED.

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